

# **Trophic structure of the zoocenoses in freshwater ecosystems under anthropogenic pressure and impact**

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PhD thesis, Sofia, 2013

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## **SUMMARY**

The present work is the first integral analysis of the influence of different types anthropogenic pressure and impact on the freshwater ecosystems in our country. A total of 173 samples of benthic macroinvertebrates, zooplankton and fish from specially selected 17 lentic and 31 lotic sampling points at water bodies of diverse type of pressure are studied. The taxonomic composition and trophic structure of the three communities are defined. The functioning of the aquatic ecosystems is analyzed by using the trophic webs modeled by using a qualitative modeling software. The main hypothesis for depending the taxonomic structure and functioning of the freshwater ecosystems by the type and special features of the anthropogenic pressure is confirmed. The formation of the taxonomic and trophic structure of the fish and invertebrate communities is considered to be a direct biotic response to anthropogenic pressure applied to the objects studied.

The most common anthropogenic impacts on the trophic structure of zooplankton communities studied is the change in the relative importance of the phytoplanktonivorous and detritivorous zooplanktonic groups. As an impact the changes in the trophic structure lead to trophic disorders in the adequacy of the riverine macrozoobenthic communities. Increasing the proportion of omnivorous fish is common impact on ichthyocenoses. Complementary effect of natural and anthropogenic environmental factors provides trophic niches with specific parameters that are occupied by species with opportunistic feeding.

The length and the horizontal connectivity in the trophic webs are found to be the key features, influenced by the pressure. One of the main anthropogenic impacts on the trophic webs is associated with the formation of numerous horizontal links, leading to decreasing the efficiency of energy transfer within and through the trophic webs.

The analysis of the main parameters of the trophic webs is considered to be a suitable tool for assessing anthropogenic pressure and impact on freshwater ecosystems. It could be useful for fulfilling the missing information in the analysis algorithm (Driving force - Pressure - State - Impact - Response), which is an essential element of the Common Implementation Strategy of the WFD (2000/60/EC).